

# MSc thesis defense presentation

## Christos Rantsoudis defends his MSc thesis

<b>Date:</b>	Monday, 09 Nov 2015
<b>Time:</b>	13:00
<b>Location:</b>	<a href="#">Univeristy of Athens,</a> <a href="#">Department of</a> <a href="#">Mathematics, University</a> <a href="#">of Athens, room Γ33</a> <a href="#">Model-theoretic</a> <a href="#">investigations on</a>
<b>Thesis title:</b>	<a href="#">"overwhelming</a> <a href="#">majority" default</a> <a href="#">conditionals</a>
<b>Committee:</b>	<ul style="list-style-type: none"><li>• <a href="#">Constantinos</a> <a href="#">Dimitracopoulos</a></li><li>• <a href="#">Costas D. Koutras</a></li><li>• <a href="#">Panagiotis</a> <a href="#">Rondogiannis</a></li><li>• <a href="#">Efstathios Zachos</a></li></ul>

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### Thesis abstract

Defeasible conditionals of the form ‘if A then normally B’ are usually interpreted with the aid of a ‘normality’ ordering between possible states of affairs:  $A \Rightarrow B$  is true if it happens that in the most ‘normal’ (least exceptional) A-worlds, B is also true. Another plausible interpretation of ‘normality’ introduced in nonmonotonic reasoning dictates that  $A \Rightarrow B$  is true iff B is true in ‘most’ A-worlds. A formal account of ‘most’ in this majority-based approach to default reasoning has been given through the usage of weak filters and weak ultrafilters, capturing at least, a basic core of a size-oriented approach to defeasible reasoning. In this paper, we investigate defeasible conditionals constructed upon a notion of ‘overwhelming majority’, defined as ‘truth in a cofinite subset of  $\omega$ ’, the first infinite ordinal. One approach employs the modal logic of the frame  $(\omega, <)$ , used in the temporal logic of discrete linear time. We introduce and investigate conditionals, defined modally over  $(\omega, <)$ ; several modal definitions of the conditional connective are examined, with an emphasis on the nonmonotonic ones. An alternative interpretation of ‘majority’ as sets cofinal (in  $\omega$ ) rather than cofinite (subsets of  $\omega$ ) is examined. For all these modal approaches over  $(\omega, <)$ , a decision procedure readily emerges, as the modal logic KD4LZ of this frame is well-known and a translation of the conditional sentences can be mechanically checked for validity. A second approach employs the conditional version of Scott-Montague semantics, in the form of  $\omega$ -many possible worlds, endowed with neighborhoods populated by its cofinite subsets. Again, different conditionals are introduced and examined. Although it is difficult to obtain a completeness theorem (since it is not easy to capture ‘cofiniteness-in- $\omega$ ’ syntactically) this research reveals the possible structure of ‘overwhelming majority’ conditionals, whose relative strength is compared to (the conditional logic ‘equivalent’ of) KLM logics and other conditional logics in the literature.

